IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Appeals and Interferences

In re the Application of

Inventors: Katsuhiko HIRAMATSU et al.

Appln No.: 10/069,642

Filed: February 28, 2002

For: COMMUNICATION TERMINAL APPARATUS AND BASE STATION APPARATUS

APPEAL BRIEF

On Appeal From Art Unit 2611
Examiner Freshteh Aghdam
Confirmation No. 3592

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I. REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, Matsushita Electric Industrial Co., Ltd. of Osaka, Japan.

II. RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences, or judicial proceedings known to Appellants, Appellants' legal representative, or the assignee that may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-27 have been presented for examination. Claims 1-21 and 24-26 have been cancelled, and claims 22, 23, and 27 stand finally rejected and form the subject matter of the present appeal.

IV. STATUS OF AMENDMENTS

No claim amendments were filed after the Final Rejection of October 31, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

An object of the claimed invention is to provide a communication system that selects a modulation and coding scheme for a base station's data channel based on: (1) the reception quality of the base station's control channel signal at a communication terminal and (2) the transmit power values of the control channel signal and data channel signal (see specification

page 9, lines 2-9). By knowing the reception quality of the control channel signal and the relative transmit power values of the control channel signal and the data channel signal, an accurate estimate of the data channel's reception quality may be made without measuring this quality. And once an accurate determination of the data channel's reception quality is made, an appropriate modulation and coding scheme may be selected for achieving high-speed transmission with a low error rate (see page 1, line 15, through page 7, line 4).

To achieve this or other objects of the invention, independent claim 22 defines a communication terminal apparatus 102 having a measuring section 304 that measures the reception quality of a control channel signal CPICH transmitted from a base station apparatus 101 (see Figs. 3 and 5 and specification page 12, lines 20-26, page 13, lines 4-6 and 14-16, and page 23, lines 16-19). An obtaining section 307 obtains, from a received signal, transmit power value information of a variable transmit power of control channel signal CPICH and a data channel signal DSCH transmitted from base station apparatus 101 (see page 13, lines 6-13, and page 23, line 23, through page 24, line 2). An estimating section 305 estimates the reception quality of data channel signal DSCH at communication terminal apparatus 102 based on the reception quality of control channel signal CPICH measured by measuring section 304 and the transmit power value information obtained by obtaining section 307 (see page 13, line 27, through page 14, line 5, and page 24, line 3-7). A deciding section 308 decides a modulation system and coding system to be used for data channel signal DSCH using the estimated reception quality of data channel signal DSCH (see page 14, lines 5-10, and page 24, lines 20-23). A transmitting section 302 transmits information of the modulation system and coding system

decided by deciding section 308 to base station apparatus 101 (see page 14, lines 5-13, and page 25, lines 3-20).

Dependent claim 23 further limits the subject matter of claim 22 by reciting that communication terminal apparatus 1103 further includes a selecting section 1206 that selects a target base station apparatus 1101, having good estimated reception quality of the data channel signal, from among a plurality of base station apparatuses 1101, 1102 as a request destination of data channel signal DSCH (see Figs. 13 and 14 and page 40, lines 6-12 and 18-26, page 41, lines 6-22, page 43, lines 3-8, and page 44, lines 7-22). Transmitting section 302 transmits information of the modulation system and coding system, used for data channel signal DSCH, decided using the estimated reception quality of data channel signal DSCH of target base station apparatus 1101 to target base station apparatus 1101 (see page 41, line 27, through page 42, line 5, and page 44, lines 22-26).

Independent claim 27 defines a communication method that measures, at a communication terminal apparatus 102, the reception quality of a control channel signal CPICH and obtains, from a received signal, transmit power value information of variable transmit power of control channel signal CPICH and a data channel DSCH signal transmitted from a base station apparatus 101 (see Figs. 3 and 5 and specification page 12, lines 20-26, page 13, lines 4-13 and 14-16, page 23, line 16, through page 24, line 2). Communication terminal apparatus 102 estimates the reception quality of data channel signal DSCH based on the measured reception quality of control channel signal CPICH and the obtained information of variable transmit power values of control channel signal CPICH and data channel signal DSCH at base station apparatus 101 (see page 13, line 27, through page 14, line 5, and page 24, line 3-7). A modulation system

and coding system are selected to be used for data channel signal DSCH using the estimated reception quality of data channel signal DSCH at communication terminal apparatus 102 (see page 14, lines 5-10, and page 24, lines 20-23). Base station apparatus 101 receives information of the selected modulation system and coding system and transmits data channel signal DSCH according to the modulation system and coding system (see page 14, lines 5-13 and 20-24, and page 25, lines 3-20, and page 28, lines 12-25).

The references herein to the specification and drawings are for illustrative purposes only and are not intended to limit the scope of the invention to the referenced embodiments.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 22, 23, and 27 stand correctly rejected, under 35 USC §103(a), as being unpatentable over Parkvall et al. (US 6,542,736) in view of Nakamura et al. (US 6,782,035).

VII. ARGUMENT

To establish a *prima facie* case of obviousness, all the claim limitations must be taught or suggested by the prior art. See *MPEP §2143.03, first sentence; In re Royka, 490 F.2d 981, 984-985, 180 USPQ 580, 583 (CCPA 1974).* Rejections on obviousness cannot be sustained by mere conclusory statements. Instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. See, *KSR International v. Teleflex Inc.*, U.S. Supreme Court No. 04-1350 (April 30, 2007). *In re Kahn,* 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) *and* see MPEP §2143.01(I), first sentence of third paragraph.

As stated in *KSR*, exemplary rationales that may support a conclusion of obviousness include:

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of known technique to improve similar devices (methods, or products) in the same way;

(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E) "Obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. See MPEP § 2143.

The present rejections appear to rely on item (G) in rejecting the present claims.

The Appellants Respectfully submit that Parkvall and Nakamura, considered alone or together, do not disclose or suggest all of the Appellants' claimed subject matter and, thus, cannot provide the motivation for a skilled artisan to modify Parkvall's system in light of

Nakamura's teachings so as to achieve the claimed subject matter, nor do they otherwise render obvious the present claimed subject matter.

Claim 22 defines a communication terminal apparatus that receives transmit power information for a control channel and transmit power information for a data channel from a base station apparatus. The communication terminal apparatus estimates, based on the received transmit power information and the measured quality of a received control channel signal, the reception quality of the data channel signal and selects a modulation and coding scheme for the data channel signal in accordance with the estimated reception quality.

The Final Rejection apparently takes the position that Parkvall discloses a communication terminal that estimates, based on received transmit power information of a pilot signal and the measured quality of the received pilot signal, the reception quality of a data channel signal (see Final Rejection page 2, last seven lines, and page 3, lines 1-5). Additionally, the Final Rejection proposes that when the transmit power value of a control channel (e.g., pilot signal) is known, the transmit power value of a data channel signal is implicitly known, and cites Nakamura's description of Fig. 26 as evidence of the inference (see Final Rejection page 2, last seven lines, and page 3, lines 1-2). Based upon these proposals, the Final Rejection concludes that a skilled artisan would find the motivation to modify Parkvall's system in light of Nakamura's teachings so as to achieve the claimed subject matter.

However, even under the circumstance in which information of a control channel signal's transmit power implies information of a data channel signal's transmit power, as proposed in the Final Rejection (see Final Rejection page 2, line 3 of last paragraph, through page 4, line 2), the fact that an implicit relationship may exist between two values does not require or imply that: (1)

a reception apparatus that determines a modulation and coding scheme is aware of the implicit relationship and (2) both values are considered by the reception apparatus when determining the modulation and coding scheme to apply to the data channel signal. The Final Rejection does not cite either Parkvall or Nakamura for disclosing items (1) and (2); thus, the Final Rejection seems to rely on the hindsight provided by Appellants' disclosure to construct a rationale for modifying Parkvall's system, in light of Nakamura's teaching, in a manner that would achieve the claimed subject matter.

Parkvall discloses, in Fig. 11, determining at step 152 a data transmission rate based on an obtained transmission power and the measured reception quality of a pilot signal (see Parkvall col. 11, lines 11-20). Parkvall does not expressly state or imply that information of a data channel signal's transmit power is considered when the data transmission rate is determined, and the Final Rejection does not propose otherwise; instead, the Final Rejection merely proposes that Parkvall discloses estimating the reception quality of the data channel signal using the measured reception quality of the pilot signal and the information of the pilot signal's transmit power (see Final Rejection page 2, lines 3-5 of last paragraph, and page 3, lines 3-5). Nakamura is not cited in the Final Rejection for supplementing the teachings of Parkvall in this regard.

Parkvall also does not disclose that the reception apparatus, which determines the transmission data rate, is aware of a prospective implicit relationship between the transmission powers of two channel signals, which seemingly follows from the fact that the Final Rejection cites Nakamura for the teaching that such a relationship could exist. But Nakamura is not cited in the Final Rejection for supplementing the teachings of Parkvall with respect to a reception

apparatus, which determines a transmission data rate, being aware of an implicit relationship between transmission powers of two channel signals.

The Background Art section of Appellants' specification describes a circumstance in which a relationship exists between the transmit power of a control channel signal and that of a data channel signal. Specifically, this section identifies the circumstance in which the transmit power of the data channel signal is lower than the transmit power of the control channel (see specification page 5, lines 9-16). However, this section discloses that the reception apparatus, which determines a modulation and coding scheme for the data channel signal, is unaware of the relationship and, therefore, cannot consider the relationship in the determination of the modulation and coding scheme (see page 5, line 17, through page 6, line 1).

Thus, the mere fact that an implicit relationship exists between the transmit power levels of two signals does not also imply that a reception apparatus is aware of the relationship or that both power levels are considered by the reception apparatus in the determination of a modulation and coding scheme. And since the Final Rejection does not propose that Parkvall or Nakamura discloses considering information of the transmit power levels of both a data channel signal and a control channel signal in the determination of a modulation and coding scheme for the data channel, it follows *per force* that Parkvall and Nakamura do not teach or suggest all of the claimed limitations.

Additionally, the Final Rejection proposes that Parkvall discloses the claimed subject matter of selecting a modulation and coding scheme in step 152 of Fig. 11 (see Final Rejection page 3, lines 5-7). However, Parkvall discloses, in step 152, selecting a data transmission rate

(see Parkvall col. 11, lines 15-20). A modulation and coding scheme is not the same as, or similar to, a data transmission rate.

By definition, modulation is a signal applied to a carrier signal to alter the carrier signal in a way that conveys informational content. Coding alters a manner of representing the informational content. A data transmission rate identifies the amount of data elements communicated per unit time.

Thus, Parkvall does not disclose the claimed subject matter of selecting a modulation and coding scheme for a data channel signal based on received transmit power information of data and control channel signals and the measured quality of a received control channel signal. Nakamura is not cited in the Final Rejection for supplementing the teachings of Parkvall in this regard.

Accordingly, the Appellants submit that Parkvall and Nakamura, considered individually or in combination, do not disclose all limitations of the apparatus defined by claim 22 and, thus, do not render obvious the subject matter of claim 22. More specifically, Parkvall and Nakamura do not suggest the claimed subject matter of a communication terminal apparatus that: (1) estimates, based on received transmit power information of data and control channel signals and the measured quality of a received control channel signal, the reception quality of the data channel signal and (2) selects a modulation and coding scheme for the data channel signal in accordance with the estimated reception quality. Independent claim 27 similarly recites the above-mentioned subject matter distinguishing apparatus claim 22 from the applied references, but with respect to a method. Therefore, reversal of the rejections applied to claims 22 and 27 is deemed to be warranted.

Moreover, with regard to the subject matter recited in claim 22 of deciding a modulation system and coding system to be used for a data channel signal using the estimated reception quality of the data channel signal, Nakamura discloses employing QPSK as a spreading modulation scheme in both uplink and downlink (see Nakamura col. 31, line 54). Since Nakamura employs only QPSK as the modulation scheme for the data portion, both Nakamura's base station apparatus and communication terminal apparatus recognize *a priori* that QPSK must be the modulation scheme for the data portion. Accordingly, as proposed in the Final Rejection, when only one modulation scheme is used, it is possible to learn the transmit power value of the data portion from the transmit power value of the pilot portion by, for example, calculating the difference between an average received power value of the pilot portion and an average received power value of the data portion.

On the other hand, with the claimed invention, the modulation scheme for the data channel signal is not known beforehand by both a base station apparatus and a communication terminal apparatus and so it is not possible to learn the transmit power value of the data channel signal from the transmit power value of the control channel signal. For example, with the claimed invention, if QPSK is used as the modulation scheme for the control channel signal and one of QPSK, 16QAM, and 64QAM may be selected as the modulation scheme for the data channel signal, which one of QPSK, 16QAM, and 64QAM is selected as the modulation scheme for the data channel signal is not known beforehand by both the mobile station apparatus and the communication terminal apparatus.

Therefore, with the claimed invention, the communication terminal apparatus is not able to learn the transmit power value of the data channel signal from the transmit power value of the

control channel signal. Without obtaining information of the transmit power value of the data channel signal from the base station apparatus, the claimed communication terminal apparatus is not able to estimate reception quality of the data channel signal. Parkvall does not supplement the teachings of Nakamura in this regard.

Accordingly, for this independent reason, Parkvall and Nakamura, considered individually or in combination, do not render obvious the claimed subject matter of deciding a modulation system and coding system to be used for a data channel signal using the estimated reception quality of the data channel signal. Independent claim 27 similarly recites this subject matter. Therefore, reversal of the rejections applied to claims 22 and 27 is warranted for this additional reason.

Dependent claim 23 incorporates the above-mentioned subject matter distinguishing base claim 22 from the applied references. Therefore, reversal of the rejection applied to claim 22 is deemed to be similarly warranted.

In view of the law and facts stated herein, it is respectfully submitted that all rejected claims define patentable subject matter. Therefore, reversal of all outstanding grounds of rejection is respectfully solicited.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

22. A communication terminal apparatus comprising:

a measuring section that measures the reception quality of a control channel signal transmitted from a base station apparatus;

an obtaining section that obtains from a received signal, transmit power value information comprising information of variable transmit power of the control channel signal and a data channel signal, transmitted from the base station apparatus;

an estimating section that estimates the reception quality of the data channel signal at the communication terminal apparatus based on the reception quality of said control channel signal measured by the measuring section and the transmit power value information obtained by the obtaining section;

a deciding section that decides a modulation system and coding system to be used for the data channel signal using the estimated reception quality of the data channel signal; and

a transmitting section that transmits information of the modulation system and coding system decided by the deciding section to the base station apparatus.

23. The communication terminal apparatus according to claim 22, further comprising:

a selecting section that selects a target base station apparatus with good estimated reception quality of the data channel signal from among a plurality of base station apparatuses as a request destination of the data channel signal, wherein:

the transmitting section transmits information of the modulation system and coding system used for the data channel signal decided using the estimated reception quality of the data channel signal of the target base station apparatus to the target base station apparatus.

27. A communication method comprising:

a measuring step of measuring at a communication terminal apparatus the reception quality of a control channel signal;

an obtaining step of obtaining from a received signal transmit power value information comprising information of variable transmit power of the control channel signal and a data channel signal, transmitted from a base station apparatus;

an estimating step of estimating at the communication terminal apparatus the reception quality of the data channel signal based on the reception quality of the control channel signal measured in the measuring step and information of variable transmit power values of the control channel signal and the data channel signal at the base station apparatus obtained in the obtaining step;

a deciding step of deciding a modulation system and coding system to be used for the data channel signal using the estimated reception quality of the data channel signal at the communication terminal apparatus;

a receiving step of receiving at the base station apparatus information of the decided modulation system and coding system; and

a transmitting step of transmitting at the base station apparatus the data channel signal according to the modulation system and coding system.

IX. EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 CFR §§1.130, 1.131, or 1.132 of this title entered by the examiner and relied upon by Appellant in the appeal.

X. RELATED PROCEEDINGS APPENDIX

There are no decisions rendered by a court or the Board in any proceeding identified pursuant to 37 CFR §41.37(c)(1)(ii).